Understanding Project Scheduling

Audience: Project team members who are responsible for planning, controlling and analyzing cost, schedule and technical performance of an activity, project, or contract.

Goal: This 8 hour course will provide a basic understanding of how to construct a Critical Path Method (CPM) project schedule, update it with the current status and forecast, and produce meaningful status, progress, and forecast reporting charts and graphs.

Learning Objectives: Participants will be able to:

- Understand the purpose and benefits of the project schedule
- Understand basic scheduling concepts and terminology
- Understand how to identify activities, define project logic, estimate activity duration, and calculate “early” and “late” start and finish dates for the project’s activities to establish the schedule baseline
- Understand the significance of the critical path, total slack and schedule reserve
- Recognize various schedule reports and formats

Learning Methods: Lectures, discussions, demonstrations, and exercises

Key Topics:

- Activities and milestones
- Resources
- Forward pass and backward pass
- Project logic
- Horizontal and vertical schedule integration
- Critical Path
- Schedule status, progress and forecast

Suggested Prerequisites:

- None

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Module Name	Topics	Learning Objectives - Participants will be able to:
1.0 Introduction	• Instructor/participant introductions • Agenda • Course Objectives • Icebreaker: The Critical Path	• Articulate course objectives and outcomes
2.0 Project Scheduling Overview	• Scheduling Overview • Policy Introduction: 7120.5, NASA Schedule Management Handbook	• Understand the purpose and benefits of the project schedule • Understand the governing requirements for schedule management on NASA projects • Understand the NASA project life cycle and the basic configuration of a satellite
3.0 Activity and Milestone Definition	• Activities • Milestones • Vertical schedule integration • Types of constraints • Level of activity detail	• Identify activities and milestones and recognize differences between them • Understand the significance of vertical schedule traceability • Recognize the role and use of constraints in the schedule • Determine how many activities are sufficient
4.0 Activity Sequencing	• Project logic network • Horizontal schedule integration • Types of dependencies • Leads and lags	• Understand the significance of horizontal schedule traceability • Recognize when to apply types of dependencies between activities • Understand the difference between leads and lags and their appropriate application • Understand the attributes of sound project logic

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5.0 Activity Duration Estimating	• Resources • Duration estimating methods • 3-point estimate	• Understand the effect of resources on the schedule • Understand the pros and cons various duration estimating methods • Explain the differences between pessimistic, optimistic and most likely duration estimates
6.0 Schedule Development	• Forward pass • Backward pass • Early start/finish dates • Late start/finish dates • Project calendars • Total slack • Free slack • Schedule reserve • Critical path • Schedule baseline • Project Control Milestone Method	• Understand how forward and backward passes are calculated • Distinguish between early dates and late dates • Recognize the role of calendars in the schedule database • Explain the differences between total slack, free slack and schedule reserve • Identify the schedule critical path and secondary paths • Understand the significance of the schedule baseline • Understand how to summarize the schedule plan, actual and forecast for management

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7.0 Schedule Status Accounting, Data Maintenance and Updating	• Types of schedule status - Percent complete - Actual start - Actual finish - Remaining duration - Actual duration - Expected finish • Sources of schedule status - In-house projects - Out-of-house projects/contracts • Data maintenance • Updating the schedule • Current schedule vs. baseline schedule	• Distinguish between actual performance, work in process, and estimate to complete • Understand how and where to obtain meaningful schedule status for both in-house effort and contractors • Identify elements of the schedule requiring routine maintenance to ensure accuracy and credibility • Understand the process for updating the schedule in a scheduling tool (e.g. MS Project) • Understand the significance of the differences between the current and baseline schedule
8.0 Schedule Performance Reporting	• Status reporting • Progress reporting • Forecasting	• Understand the differences between status, progress and forecast • Recognize the usefulness of various schedule reporting charts, graphs and formats • Understand the implications of schedule slips and delays